a carrier or diluent. Support for the above amendments is found in the specification on page 16, lines 26-30 and on page 17, lines 4-24.

Claims 46, 48, and 50 were added to more clearly point out that particular aspects of the present invention concern particles comprising a triazole fungicide dispersed evenly throughout a polymer matrix. Support for these amendments is found on page 17, lines 17-20.

Claims 47, 49, and 51 were added to more clearly point out that particular aspects of the present invention concern particles comprising a triazole fungicide dispersed as a concentration gradient in a polymer matrix. Support for these amendments is found on page 17, lines 17-20.

RESPONSE TO OFFICE ACTION

Rejection under 35 U.S.C. § 102

Claims 1-2, 12-13, 18, 36, and 39 have been rejected under 35 U.S.C. § 102 as allegedly being anticipated by Stock - 96'. Applicants respectfully traverse.

Stock teaches foliar application of microencapsulated triazole fungicides, including flurquinconazole, with adjuvants. The Examiner is directed to page 17, line 4 of the present specification, where it is disclosed that "The particles of the present invention differ from "microcapsules," in which a polymeric shell surrounds a liquid or solid core that contains an active ingredient." The particles of the present invention comprise a polymer matrix material with a triazole fungicide dispersed in the matrix.

Claims 1-3, 7, 12-18, 36, 39, and 45 have been rejected under 35 U.S.C. § 102 as allegedly being anticipated by Russell *et al.* (WO 90 103 732). Russell *et al.* is primarily concerned with the use of lytic enzymes as fungicides and as additives to other fungicides. Russell *et al.* teaches the combination of the enzymes with certain fungicides along with a

diluent or carrier. Examples of carriers taught by Russell *et al.* include polyalkylene oxides and clay. In Russell *et al* on page 7, beginning at line 11, it is disclosed that the active ingredient can be used as a dusting powder or as a granular solid. A dusting powder comprises the active ingredient intimately mixed and ground with a solid diluent. A granular solid comprises the active ingredient associated with a diluent wherein the mixture is subsequently granulated. In both cases, the active ingredient is in intimate contact with the diluent, but it is not suggested that the active ingredient is in any way dispersed in the diluent matrix or within the diluent particles.

In contrast, the present invention concerns a particle which comprises a polymer matrix and a triazole fungicide dispersed in the polymer matrix. As disclosed on page 7 of the present specification beginning at line 26, the active material is entrapped, embedded, dispersed, or otherwise distributed within the polymer matrix. This yields several benefits that are aspects of the present invention and that are not taught in the cited art. For example, a particle of the present invention can release an active agent in a controlled way by diffusion (page 33, lines 26-31). The rate of release depends on, among other things, the type of polymer and the size of the particle (page 34, lines 15-18). This offers the advantage that the release rate can be tailored to the specific agricultural situation (page 19, lines 21-25). Stock and Russell *et al.* do not disclose this advantage because Stock and Russell do not disclose a fungicide entrapped in a polymer matrix. Applicants therefore respectfully request that the rejection under 35 U.S.C. § 102 be withdrawn.

Rejection under 35 U.S.C. § 103 (a)

Claims 1-18 and 36-45 have been rejected as allegedly being obvious given Russell *et al.* (WO 90 03732) in view of Stock 96', Tocker (EP 0 004 758), Capyzzi *et al.* (EP 0 729 700), and Dao *et al.* (U.S. 5,719,103).

The examiner contends that the primary reference, i.e., Russell *et al.*, discloses the essence of the instant invention, but does not specify each and every element of the claimed methods and compositions, but that the secondary references provide these additional elements. Applicants traverse.

As discussed above, Russell *et al.* does not disclose a solid particle which comprises a polymer matrix and a triazole fungicide dispersed in the polymer matrix. Russell *et al.* discloses mixtures of enzymes with chemical fungicides along with carriers and diluents, some of which happen to be polymers.

The Stock reference is concerned with microencapsulated seed treatment formulations. As discussed above, microencapsulation is a term used in the art to describe a polymeric shell that surrounds a liquid or solid core that contains an active ingredient. The present invention is distinguished from microencapsulation because it comprises a solid particle of a polymer matrix in which a triazole fungicide is entrapped.

The examiner alleges that Toeker uses the polymers of the present invention with fungicides and insecticides. In fact, Toeker is concerned with polymer particles impregnated with one specific insecticide: methomyl. Because Toeker is concerned with this one specific insecticide, the methods and compositions disclosed in Toeker are specific for methomyl. See, for example, page 2 beginning at line 25 where it is disclosed that only polymers that permit the

passage of sufficient methomyl to have substantially undiminished initial insecticidal activity and enhanced residual activity may be used. The triazole fungicides of the present invention differ from the methomyl insecticide used in Toeker both in chemical structure and in mode of activity. There is nothing in the Toeker reference to suggest that the methods disclosed therein could be modified to yield a solid particle comprising a polymer matrix with a triazole fungicide entrapped in the polymer. Toeker discloses that once the particle impregnated with methomyl is obtained, it can be subsequently be used in combination with fungicides, bactericides, acaricides, nematicides, insecticides, or other biologically active compounds. Toeker does not suggest that a fungicide is in any way entrapped or dispersed within a polymer matrix.

The Examiner alleges that Capuzzi *et al.* teaches the equivalency of the instant triazoles. Capuzzi *et al.* is primarily concerned with adjuvants for fungicidal microemulsions. Many of the fungicides of the instant invention are grouped together in the Capuzzi reference and they supposedly exhibit the common property that their activity is enhanced by the adjuvant disclosed therein when they are formulated as microemulsions. That disclosure holds no relevance to the present invention which is concerned, not with microemulsion compositions, but rather with a solid particle comprising a polymer matrix and a triazole fungicide entrapped in the polymer matrix.

The Examiner alleges that Dao *et al.* shows seed and folier treatment with Febuonazole. Dao *et al.* is primarily concerned with powder formulations of agriculurally active ingredients including arthropodicides, bacteriocides, fungicides, herbicides, pesticides and plant growth regulators. The powder formulations of Dao *et al.* are produced by homogenizing dry powder ingredients including pigments, plasticizers, and dispersing agents and then adding the liquid

ingredients thereto (col. 6, lines 44-55). There is no suggestion in Dao *et al.* that the any of the active ingredients, including the fungicides, are entrapped with in a polymer matrix.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). None of the references cited by the Examiner, either alone or in combination with each other, teach or suggest a solid particle comprising a polymer matrix and a triazole fungicide entrapped in the polymer matrix. Applicants therefore respectfully request that the rejection under 35 U.S.C. § 103 (a) be withdrawn.

Rejection under 35 U.S.C. § 102(e)

Claims 1-3, 5, 7, 8, 12-18, 36-39, 41, 43, and 45 have been rejected under 35 U.S.C. § 102 (e) as being anticipated by Dao *et al.* Applicants respectfully traverse.

As discussed above, Dao *et al.* is primarily concerned with powder formulations of agriculurally active ingredients including arthropodicides, bacteriocides, fungicides, herbicides, pesticides and plant growth regulators. The formulations further comprise wetting agents, dispersing agents, anticaking agents, and adhesion agents. Some of these agents may be polymers. The formulations are prepared by finely grinding and homogenizing the solid ingredients and subsequently adding the liquid ingredients. There is nothing in Dao *et al.* to suggest that the active agent is dispersed in a polymer matrix. Applicants therefore respectfully ask that the rejection under 35 U.S.C. § 102 (e) be withdrawn.

CONCLUSION

The Examiner is encouraged to call the undersigned should any further action be required. Should any fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason, the Commissioner is authorized to deduct said fees from Deposit Account No. 01-2508/11897.0100.CPUS00.

Respectfully submitted,

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Date: March 26, 2001

Pending Claims: Application Serial Number 09/326,014

1. A particle comprising a triazole fungicide dispersed in a polymer matrix.

2. The particle of claim 1 wherein the triazole fungicide comprises a compound selected from the group consisting of bitertanol, bromuconazole, cyproconazole, difenoconazole, epoxiconazole, fenbuconazole, fluquinconazole, flusilazole, flutriafol, hexaconazole, imibenconazole, metconazole, myclobutanil, penconazole, propiconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, and triticonazole.

3. The particle of claim 2 wherein the triazole fungicide comprises a compound selected from the group consisting of cyproconazole, epoxiconazole, tebuconazole, triadimefon, and triadimenol.

4. The particle of claim 3 wherein the triazole fungicide comprises cyproconazole.

5. The particle of claim 3 wherein the triazole fungicide comprises tebuconazole.

6. The particle of claim 2 wherein the triazole fungicide comprises epoxiconazole.

7. The particle of claim 1 wherein the polymer matrix comprises a polymer selected from the group consisting of poly(methylmethacrylate), poly(lactic acid), a poly(lactic acid-glycolic acid) copolymer, cellulose acetate butyrate, a poly(styrene), hydroxybutyric acid-hydroxyvaleric acid copolymer, a styrene maleic anhydride copolymer, poly(methylvinyl ether-maleic acid), poly(caprolactone), poly(n-amylmethacrylate), wood rosin, a polyanhydride, a polyorthoester, a poly(cyanoacrylate), poly(dioxanone), ethyl cellulose, a ethyl vinyl acetate polymer, poly(ethylene glycol), poly(vinylpyrrolidone), an acetylated monogylceride, an acetylated digylceride, an acetylated trigylceride, poly(phosphazene), chlorinated natural rubber, a vinyl polymer, polyvinyl chloride, a hydroxyalkylcellulose, polybutadiene, polyurethane, a vinylidene chloride polymer, a styrene-butadiene copolymer, a styrene-acrylic copolymer, an alkylvinylether polymer, a cellulose acetate phthalate, an ethyl vinyl phthalate, cellulose

triacetate, a polyanhydride, a polyglutamate, a polyhydroxy butyrate, polyvinyl acetate, a vinyl acetate-ethylene copolymer, a vinyl acetate-vinylpyrrolidone copolymer, an acrylic polymer, an alkyl acrylate polymer, an aryl acrylate polymer, an aryl methacrylate polymer, a poly(caprolactam), an epoxy resin, a polyamine epoxy resin, a polyamide, a polyvinyl alcohol polymer, a polyalkyd resin, a phenolic resin, an abietic acid resin, a silicone, a polyalkylene oxide, and a polyester.

8. The particle of claim 1 further comprising a plasticizer.

9. The particle of claim 1 wherein the mean diameter of said particle is in the range of from about 0.1 microns to about 200 microns.

10. The particle of claim 9 wherein the mean diameter of said particle is in the range of from about 0.2 microns to about 100 microns.

11. The particle of claim 10 wherein the mean diameter of said particle is in the range of from about 0.5 microns to about 50 microns.

12. A fungicidal composition comprising:
(a) a particle comprising a triazole fungicide dispersed in a polymer matrix, and
(b) an agricultural adjuvant.

13. The fungicidal composition of claim 12 wherein the fungicidal composition is in the form of a liquid suspension.

14. The fungicidal composition of claim 12 wherein the fungicidal composition is in the form of a wettable powder.

15. The fungicidal composition of claim 12 wherein the fungicidal composition is in the form of a granule.

16. The fungicidal composition of claim 15 wherein the granule is a water-dispersible granule.

17. The fungicidal composition of claim 12 wherein the agricultural adjuvant comprises a dispersant.

18. The fungicidal composition of claim 12 wherein the agricultural adjuvant comprises a diluent.

36. A method for the treatment or prophylaxis of a fungal disease in a target plant wherein the method comprises contacting a plant cell, a plant tissue, or a seed with a particle wherein the particle comprises a triazole fungicide dispersed in a polymer matrix.

37. The method of claim 36 comprising contacting a seed with the particle.

38. The method of claim 37 wherein the contacting is performed before the seed is planted.

39. The method of claim 36 wherein the triazole fungicide comprises a compound selected from the group consisting of bitertanol, bromuconazole, cyproconazole, difenoconazole, epoxiconazole, fenbuconazole, fluquinconazole, flusilazole, flutriafol, hexaconazole, imibenconazole, metconazole, myclobutanil, penconazole, propiconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, and triticonazole.

40. The method of claim 39 wherein the triazole fungicide comprises cyproconazole.

41. The method of claim 39 wherein the triazole fungicide comprises tebuconazole.

42. The method of claim 39 wherein the triazole fungicide comprises epoxiconazole.

43. The method of claim 39 wherein the triazole fungicide comprises triadimenol.

44. The method of claim 39 wherein the triazole fungicide comprises triadimefon.

45. The method of claim 36 wherein the polymer matrix comprises a polymer selected from the group consisting of poly(methylmethacrylate), poly(lactic acid), a poly(lactic acid-glycolic acid) copolymer, cellulose acetate butyrate, a poly(styrene), hydroxybutyric acid-hydroxyvaleric acid copolymer, a styrene maleic anhydride copolymer, poly(methylvinyl ether-maleic acid), poly(caprolactone), poly(n-amylmethacrylate), wood rosin, a polyanhydride, a polyorthoester, a poly(cyanoacrylate), poly(dioxanone), ethyl cellulose, a ethyl vinyl acetate polymer, poly(ethylene glycol), poly(vinylpyrrolidone), an acetylated monogylceride, an acetylated digylceride, an acetylated trigylceride, poly(phosphazene), chlorinated natural rubber, a vinyl polymer, polyvinyl chloride, a hydroxyalkylcellulose, polybutadiene, polyurethane, a vinylidene chloride polymer, a styrene-butadiene copolymer, a styrene-acrylic copolymer, an alkylvinylether polymer, a cellulose acetate phthalate, an ethyl vinyl phthalate, cellulose triacetate, a polyanhydride, a polyglutamate, a polyhydroxy butyrate, polyvinyl acetate, a vinyl acetate-ethylene copolymer, a vinyl acetate-vinylpyrrolidone copolymer, an acrylic polymer, an alkyl acrylate polymer, an aryl acrylate polymer, an aryl methacrylate polymer, a poly(caprolactam), an epoxy resin, a polyamine epoxy resin, a polyamide, a polyvinyl alcohol polymer, a polyalkyd resin, a phenolic resin, an abietic acid resin, a silicone, a polyalkylene oxide, and a polyester.

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46. A particle according to claim 1, wherein the triazole fungicide is dispersed evenly throughout the polymer matrix.

47. A particle according to claim 1, wherein the triazole fungicide is dispersed as a concentration gradient in the polymer matrix.

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48. A fungicidal composition according to claim 12, wherein the triazole fungicide is dispersed evenly throughout the polymer matrix.

49. A fungicidal composition according to claim 12, wherein the triazole fungicide is dispersed as a concentration gradient in the polymer matrix.

50. A method according to claim 36, wherein the triazole fungicide is dispersed evenly throughout the polymer matrix.

51. A method according to claim 36, wherein the triazole fungicide is dispersed as a concentration gradient in the polymer matrix.